

FORM PTO-1390 (REV 10-95)		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE	ATTORNEYS DOCKET NO.  4838WG-1
TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371			U.S. APPLICATION NO. (If known, see 35 CFR 1.5) <b>10/019767</b>
INTERNATIONAL APPLICATION NO.  PCT/GB00/02461	INTERNATIONAL FILING DATE  27 June 2000	PRIORITY DATE CLAIMED  30 June 1999	
TITLE OF INVENTION  "GOLF BALLS"			
APPLICANT(S) FOR DO/EO/US JOLLIFFE, Steven Paul; JOLLIFFE, David Victor and EMMERSON, Geoffrey			
Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:			
<ol style="list-style-type: none"> <li>1. <input checked="" type="checkbox"/> This is a <b>FIRST</b> submission of items concerning a filing under <u>35 U.S.C. 371</u>.</li> <li>2. <input type="checkbox"/> This is a <b>SECOND</b> or <b>SUBSEQUENT</b> submission of items concerning a filing under 35 U.S.C. 371.</li> <li>3. <input checked="" type="checkbox"/> This express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(I).</li> <li>4. <input checked="" type="checkbox"/> A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.</li> <li>5. <input checked="" type="checkbox"/> A copy of the International Application as filed (35 U.S.C. 371(c)(2)) <ol style="list-style-type: none"> <li>a. <input checked="" type="checkbox"/> is transmitted herewith (required only if not transmitted by the International Bureau).</li> <li>b. <input type="checkbox"/> has been transmitted by the International Bureau</li> <li>c. <input type="checkbox"/> is not required, as the application was filed in the United States Receiving Office (RO/US).</li> </ol> </li> <li>6. <input type="checkbox"/> A translation of the International Application into English (35 U.S.C. 371(c)(2)).</li> <li>7. <input checked="" type="checkbox"/> Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3)). <ol style="list-style-type: none"> <li>a. <input type="checkbox"/> are transmitted herewith (required only if not transmitted by the International Bureau).</li> <li>b. <input type="checkbox"/> have been transmitted by the International Bureau.</li> <li>c. <input type="checkbox"/> have not been made; however, the time limit for making such amendments has NOT expired.</li> <li>d. <input checked="" type="checkbox"/> have not been made and will not be made.</li> </ol> </li> <li>8. <input type="checkbox"/> A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).</li> <li>9. <input type="checkbox"/> An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).</li> <li>10. <input type="checkbox"/> A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).</li> </ol>			
Items 11. To 16. below concern documents or information included:			
<ol style="list-style-type: none"> <li>11. <input type="checkbox"/> An Information Disclosure Statement under 37n CFR 1.97 and 1.98.</li> <li>12. <input type="checkbox"/> An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.23 and 3.31 is included.</li> <li>13. <input checked="" type="checkbox"/> A <b>FIRST</b> preliminary amendment. <input type="checkbox"/> A <b>SECOND</b> or <b>SUBSEQUENT</b> preliminary amendment.</li> <li>14. <input type="checkbox"/> A substitute specification.</li> <li>15. <input type="checkbox"/> A change of power of attorney and/or address letter.</li> <li>16. <input checked="" type="checkbox"/> Other items or information: A copy of the application as amended pursuant to PCT Article 34.</li> </ol>			

10/019767

531 Rec'd PCT/PTC 28 DEC 2001

PATENT APPLICATIONS

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re the Application of: ) PRELIMINARY AMENDMENT  
)  
) JOLLIFFE, et al. )  
)  
Int'l. Serial No.: PCT/GB00/02461 ) "EXPRESS MAIL" MAILING LABEL NUMBER: EL822582755US  
) DATE OF DEPOSIT: 12/28/01  
)  
Int'l. Filing Date: 27 June 2000 ) I HEREBY CERTIFY THAT THIS PAPER OR FEE IS BEING  
) DEPOSITED WITH THE UNITED STATES POSTAL SERVICE  
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Priority Date: 30 June 1999 ) UNDER 37 CFR 1.10 ON THE DATE INDICATED ABOVE AND  
) IS ADDRESSED TO THE ASSISTANT COMMISSIONER FOR  
) PATENTS, BOX PCT, WASHINGTON, D.C. 20231.  
For: "GOLF BALLS" )  
) TYPED OR PRINTED NAME: Christine Jacquet  
)  
Atty. File No.: 4838WG-1 ) SIGNATURE: Christine Jacquet

**Box PCT**

Assistant Commissioner for Patents  
Washington, D.C. 20231

Dear Sir:

Prior to the initial review of the above-identified patent application by the Examiner, please enter the following Preliminary Amendment. Fees for this Preliminary Amendment are calculated and included with the Transmittal Letter accompanying this Amendment. Please charge any underpayment or debit any overpayment to Deposit Account 19-1970.

Please amend the above-identified patent application as follows:

IN THE CLAIMS:

Please amend claims 1-9 to read as follows:

1. (Once Amended) A golf ball comprising a core with an identification device embedded in the core, the identification device comprising a coded element and an aerial wherein the identification device further comprises a diaphragm and wherein at least one of the coded element and the aerial are connected to the diaphragm.

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2. (Once Amended) A golf ball according to claim 1, wherein the identification device is a radio frequency identification device.
3. (Once Amended) A golf ball according to claim 1, wherein the coded element is mounted in a plate, with the aerial being formed by a coil arranged on one face of the plate and the diaphragm being arranged on the opposite face of the plate.
4. (Once Amended) A golf ball according to claim 1, wherein the coded element is a chip which is connected to the diaphragm.
5. (Once Amended) A golf ball according to claim 4, wherein the aerial is separately connected to the diaphragm.
6. (Once Amended) A golf ball according to claim 1, wherein the diaphragm is heat conductive.
7. (Once Amended) A golf ball according to claim 6, wherein the diaphragm is steel.
8. (Once Amended) A method of manufacturing a golf ball incorporating an identification device, the method comprising the steps of:
  - molding the identification device in a capsule member,
  - placing the capsule member between two parts of a ball core,
  - adhering the ball core parts to each other around the capsule member, and
  - providing the thus-formed core with a covering, wherein means for protecting the identification device from the effects of impacts are molded in the capsule member.
9. (Once Amended) A method according to claim 8, wherein the core parts form a core of cuboid shape and are subsequently processed to have a spherical shape.

REMARKS/ARGUMENTS

The above amendments are being submitted in connection with the national stage filing of the present Application. The amendments eliminate the multiple dependent claims from the Application.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned "Version With Markings to Show Changes Made."

Respectfully submitted,

SHERIDAN ROSS P.C.

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Date: 28 Dec 2001

VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Claims:

Claims 1-9 have been amended as follows:

1. (Once Amended) A golf ball comprising a core (35) with an identification device (10) embedded in the core, the identification device comprising a coded element (12) and an aerial (14) ~~characterised in that~~ wherein the identification device (10) further comprises a ~~spring or diaphragm (16) and in that wherein at least one of the coded element (12) and/or the aerial (14) to dampen mechanical shocks thereto are connected to the spring or diaphragm (16).~~
2. (Once Amended) A golf ball according to claim 1, wherein the identification device (10) is a radio frequency identification device.
3. (Once Amended) A golf ball according to claim 1 ~~or 2~~, wherein the coded element is mounted in ~~or on~~ a plate (11), with the aerial being formed by a coil arranged on one face of the plate and the diaphragm (16) being arranged on the opposite face of the plate.
4. (Once Amended) A golf ball according to ~~any preceding~~ claim 1, wherein the coded element is a chip (12) which is connected to the diaphragm (16).
5. (Once Amended) A golf ball according to claim 4, wherein the aerial (14) is separately connected to the diaphragm (16).
6. (Once Amended) A golf ball according to ~~any preceding~~ claim 1, wherein the ~~spring or diaphragm (16)~~ is heat conductive.
7. (Once Amended) A golf ball according to claim 6, wherein the ~~material~~ diaphragm is steel.
8. (Once Amended) A method of manufacturing a golf ball incorporating an identification device (10), the method ~~including~~ comprising the steps of:  
moulding molding the identification device in a ~~dise or~~ capsule member (20),  
placing the capsule member (20) between two parts of a ball core (35),  
adhering the ball core parts to each other around the capsule member (20), and  
~~then subjecting~~ providing the thus-formed core to further processing steps, ~~including providing it with a covering, characterised in that wherein means (16) for protecting the identification device from the effects of impacts are also moulded~~ molded in the ~~dise or~~ capsule member.
9. (Once Amended) A method according to claim 8, wherein the core parts form a core (35) of cuboid shape and are subsequently processed to have a spherical shape (35').

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/GOLF BALLS/

The present invention relates to balls, especially golf balls, incorporating an identification device.

U.S. patent 5,743,815 discloses such an arrangement, in which a passive transponder is surrounded by elastic material and a rigid housing to produce a coded golf ball. GB patent 1,172,449 discloses a radio emitter arranged in the liquid composition at the centre of a golf ball. U.S. 5582550 discloses a golf ball having embedded therein an identification device and an aerial.

U.S. 3,782,730 also shows a golf ball with an oscillator circuit which is surrounded by a resilient sphere and which is to aid location of the ball. The circuit is set in a resin mass which is located in a rubber core. The disclosure of this document corresponds generally to the introduction of claims 1 and 8.

Coded golf balls are necessary in order to efficiently run golf driving ranges such as those disclosed in our co-pending patent application PCT/GB99/00883.

A problem with prior arrangements is to provide a sufficiently reliable identification device which is robust enough to withstand the shock of repeated impacts with a golf club. Another problem is the need to withstand the extreme conditions of temperature and pressure required during the manufacture of golf balls. In addition the identification device should have no effect on the performance of the golf ball in use.

The present invention seeks to overcome or reduce one or more of the above problems.

According to a first aspect of the present invention, a golf ball comprising a core with an identification device embedded in the core, the identification device comprising a coded element and an aerial characterised in that the identification device further comprises a spring or diaphragm and in that the coded element and/or the

aerial, to dampen mechanical shocks thereto, are connected to the spring or diaphragm.

The identification device is preferably a radio frequency identification device.

The coded element may be mounted in or on a plate with the aerial being formed by a coil arranged on one face of the plate and the diaphragm being arranged on the opposite face of the plate.

In preferred arrangements the coded element, in the form of a chip, is connected to the diaphragm. The aerial coil is separately connected to the diaphragm, so that the diaphragm may also serve to electrically connect the chip and the aerial coil.

The spring or diaphragm is preferably made of a heat conductive material so that it can serve as a heat sink during subsequent manufacturing stages of the golf ball to prevent overheating of the coded element and/or the aerial.

According to a second aspect of the present invention, there is provided a method of manufacturing a golf ball incorporating an identification device, the method including the steps of moulding the identification device in a disc or capsule member, placing the member between two parts of a ball core, adhering the core parts to each other around the member, and then subjecting the thus-formed core to further processing steps, including providing it with a covering, characterised in that means for protecting the identification device from the effects of impacts are also moulded in the disc or capsule member.

The core parts are preferably symmetrical and may be hemispherical or cuboid shape (to form a cuboid core which is subsequently processed to have a spherical shape).

Preferred embodiments of the present invention will now be described, by way of example only, with reference to the accompanying drawings, of which:

Figure 1 shows a top plan view of an identification device for use in an embodiment of the present invention;

Figure 2 shows a bottom plan view of the device of Figure 1;

Figure 3 shows the device of Figures 1 and 2 encapsulated in a capsule;

Figure 4a and 4b show the device of Figure 3 is embedded in a core of cuboid shape; and

Figure 5 shows the core of Figure 4 after a further processing step.

Referring to the drawings, Figures 1 and 2 show an identification device 10 comprising a substrate formed by an insulating plate 11 e.g. of a plastics material such as any polyvinyl chloride product with the necessary temperature characteristics. The identification device is a passive device and includes an ASIC chip 12 with a 64 bit memory which can be read only or may have both read and write functions. The device operates at radio frequency preferably in the range 66kHz – 13.56 MHz. It also comprises a generally circular copper coil aerial 14 and arranged to receive interrogation signals from external readers and to transmit an appropriate response. The code within the coded response of the aerial 14 is stored in the memory of chip 12.

On the opposite major surface of plate 11, there is provided an annular or coiled shock absorbing member in the form of a steel diaphragm 16. Diaphragm 16 has a tongue 18 and a meandering section or castellation 19 which assists in bonding to the plate 11. The diaphragm is resiliently mounted, e.g. on a spring part, so as to protect the identification device from the impact of a golf club.

The physical arrangement is such that the chip 12 is mounted on the back of tongue 18 of the diaphragm 16 as seen in Figure 2; this enables the diaphragm to act as an effective heat sink for chip 12 during processing of the core. The chip 12 extends through a hole 22 in the plate 11 but without being directly attached to the plate. The aerial coil 14 is separately attached to the diaphragm 16 by a connection passing through the plate 11; this means that the diaphragm can serve as a conductive link for signals passing between aerial 14 and chip 12.



The plate 11, with the various components mounted thereon, is then located in a mould, and epoxy resin material 17 is then cast around it to form a disc member or capsule 20, Figure 3. The capsule provides high impact absorption and bonding for the plate arranged substantially along its central plane. As the material of the capsule sets, the difference between the thermal setting properties of the different materials enables the diaphragm to "set-back", giving room for relative movement after setting. Typical maximum dimensions of the capsule are diameter 17mm and depth 3.5mm.

As shown in Figures 4a and 4b, the capsule 20 is then positioned within a pre-manufactured soft synthetic rubber billet or core 35 of generally cuboid shape. This is done by slicing the billet in half, cleaning the cut surfaces with solvent, coating the capsule with a bonding solution to improve adhesion and to prevent delamination, placing the capsule carefully at the centre of the billet 35, and bonding the two halves of the billet together again. Here, it is important that the capsule 20 is located centrally of the loaded synthetic rubber/chalk pre-manufactured core 35. This can be done manually or automatically with a specially-designed tool. The capsule 20 should be oriented with its major surfaces parallel to the major surfaces of the core 35.

The accurate location of the capsule 20 within each billet half, can be assisted by cutting or machining an appropriately shaped recess.

The billet is then subjected to a conventional manufacturing process during which it reaches temperatures of 200°C and pressures of up to 15.4 MN/m<sup>2</sup> (1ton/square inch) as the rubber compound vulcanises and adopts a spherical form 35', Figure 5. During the heating process, the diaphragm 16 further serves as a heat sink for the chip 12 and the rest of the identification device, which is thus prevented from thermal damage. A conventional dimpled cover of material sold under the trade name of Surlyn or similar material is subsequently applied as the outer layer of the ball.

A ball manufactured as above is within the normal weight specification (maximum 45.93 grams) and performs exactly as a normal ball, i.e. it looks and feels the same and the

presence of the identification device does not affect the flight, trajectory, run, distance or dispersion of the ball in use.

In addition, alternative arrangements may be provided for absorbing shocks. For example, in one modification, electronic circuitry is mounted on an aerial coil which in turn is mounted on a spring.

The identification system could be used in other sorts of balls, e.g. tennis balls, or any other type of object which undergoes rough treatment.

Instead of uniquely identifying the ball or other object, the device may simply be part of a presence-sensing system, e.g. as an aid to locating lost golf balls.

CLAIMS

1. A golf ball comprising a core (35) with an identification device (10) embedded in the core, the identification device comprising a coded element (12) and an aerial (14) characterised in that the identification device (10) further comprises a spring or diaphragm (16) and in that the coded element (12) and/or the aerial (14), to dampen mechanical shocks thereto, are connected to the spring or diaphragm (16).
2. A golf ball according to claim 1, wherein the identification device (10) is a radio frequency identification device.
3. A golf ball according to claims 1 or 2, wherein the coded element is mounted in or on a plate (11), with the aerial being formed by a coil arranged on one face of the plate and the diaphragm (16) being arranged on the opposite face of the plate.
4. A golf ball according to any preceding claim, wherein the coded element is a chip (12) which is connected to the diaphragm (16).
5. A golf ball according to claim 4, wherein the aerial (14) is separately connected to the diaphragm (16).
6. A golf ball according to any preceding claim wherein the spring or diaphragm (16) is heat conductive.
7. A golf ball according to claim 6, wherein the material is steel.

8. ~~A method of manufacturing a golf ball incorporating an identification device (10), the method including the steps of moulding the identification device in a disc or capsule member (20), placing the member (20) between two parts of a ball core (35), adhering the core parts to each other around the member (20), and then~~

CLAIMS

1. A golf ball comprising a core (35) with an identification device (10) embedded in the core, the identification device comprising a coded element (12) and an aerial (14) characterised in that the identification device (10) further comprises a resilient member (16) and in that the coded element (12) and/or the aerial (14), to dampen mechanical shocks thereto, are connected to the resilient member (16).
2. A golf ball according to claim 1, wherein the identification device (10) is a radio frequency identification device.
3. A golf ball according to claims 1 or 2, wherein the coded element is mounted in or on a plate (11), with the aerial being formed by a coil arranged on one face of the plate and the resilient member being arranged on the opposite face of the plate.
4. A golf ball according to any preceding claim, wherein the resilient member is in the form of a diaphragm (16) and the coded element is a chip (12) which is connected to the diaphragm.
5. A golf ball according to claim 4, wherein the aerial (14) is separately connected to the diaphragm.
6. A golf ball according to any preceding claim wherein the resilient member (16) is heat conductive.
7. A golf ball according to claim 6, wherein the material is steel.
8. A method of manufacturing a golf ball incorporating an identification device (10), the method including the steps of moulding the identification device in a disc or capsule member (20), placing the member (20) between two parts of a ball core (35), adhering the core parts to each other around the member (20), and then

subjecting the thus-formed core to further processing steps, including providing it with a covering, characterised in that means (16) for protecting the identification device from the effects of impacts are also moulded in the disc or capsule member.

9. A method according to claim 8, wherein the core parts form a core (35) of cuboid shape and are subsequently processed to have a spherical shape (35').

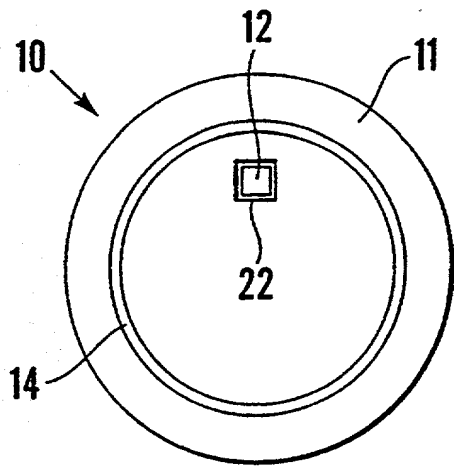


Fig. 1

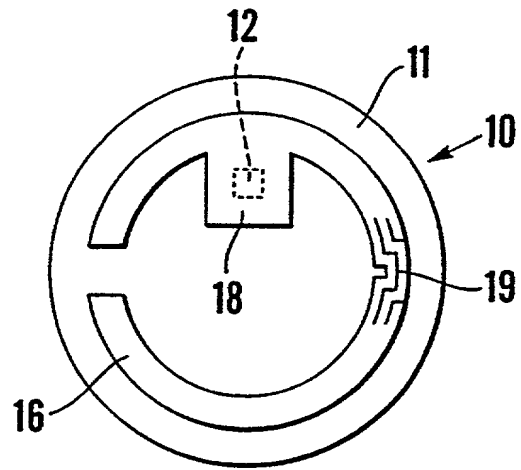


Fig. 2

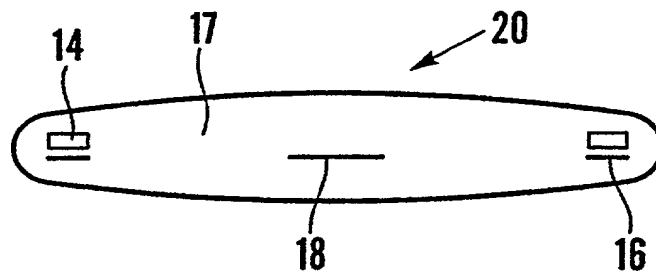


Fig. 3

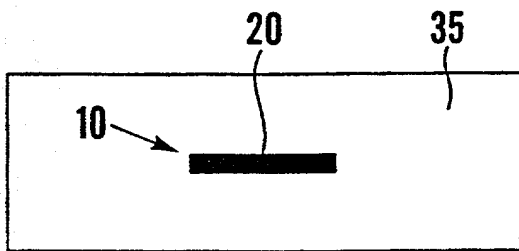


Fig. 4a

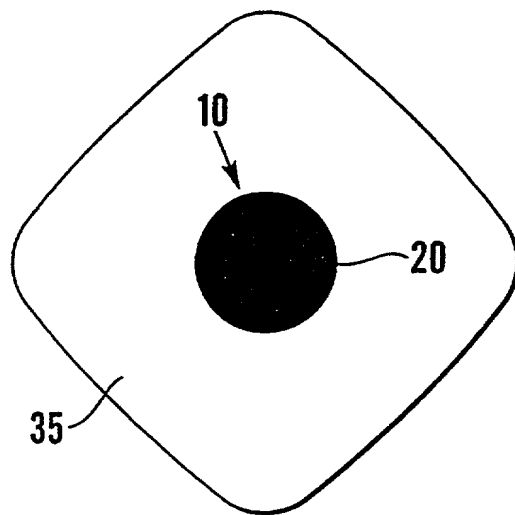


Fig. 4b

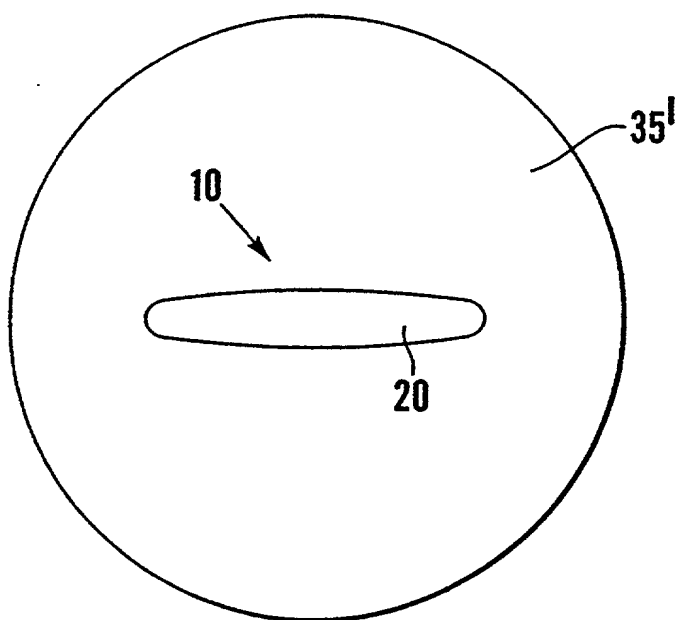


Fig. 5

(19) World Intellectual Property Organization  
International Bureau



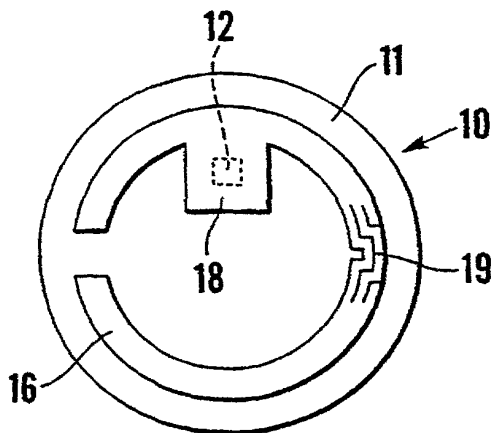
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- (51) International Patent Classification<sup>7</sup>: A63B 43/00 (74) Agents: POWELL, Stephen, David et al.; Williams, Powell & Associates, 4 St. Paul's Churchyard, London EC4M 8AY (GB).
- (21) International Application Number: PCT/GB00/02461
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- (30) Priority Data:  
9915331.4 30 June 1999 (30.06.1999) GB
- (71) Applicant (for all designated States except US): **WORLD GOLF SYSTEMS LTD** [GB/GB]; Canada House, 272 Field End Road, Eastcote, Middlesex HA4 9NA (GB).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **JOLLIFFE, Steven, Paul** [GB/GB]; World Golf Systems Ltd, Canada House, 272 Field End Road, Eastcote, Middlesex HA4 9NA (GB). **JOLLIFFE, David, Victor** [GB/GB]; World Golf Systems Ltd, Canada House, 272 Field End Road, Eastcote, Middlesex HA4 9NA (GB). **EMMERSON, Geoffrey** [GB/GB]; World Golf Systems Ltd, Canada House, 272 Field End Road, Eastcote, Middlesex HA4 9NA (GB).
- (84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).
- Published:**  
— With international search report.
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: GOLF BALLS



(57) Abstract: A golf ball having an identification device (10) embedded in it comprises an aerial (14) and a coded chip (12), which are associated with a resilient member (16) arranged to dampen shock form impact. The resilient members is in the form of a diaphragm (16), to which the chip (12) and aerial (14) are separately connected. The above components, mounted on an insulating plate (11), are moulded in a capsule (20) which is then placed at the centre of a golf ball core.

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Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

DO/PTO U.S. Department of Commerce  
Rev. 6/95 Patent and Trademark Office

Attorney Docket Number

4838WG-1

First Named Inventor

Steven Paul Jolliffe

**COMPLETE IF KNOWN**

Application Number

Filing Date

Group Art Unit

Examiner Name

**DECLARATION FOR  
UTILITY OR DESIGN  
PATENT APPLICATION**

☐ Declaration Submitted with Initial Filing      OR      ☐ Declaration Submitted after Initial Filing

As below named inventor, I hereby declare that::

My residence, post office address, and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed for which a patent is sought on the invention entitled:

"GOLF BALLS"

(Title of the Invention)

the specification of which

☐ is attached hereto

OR

☒ was filed on 27 June 2000 as United States Application Number or PCT International (MM/DD/YYYY)

Application Number PCT/GB00/02461 and was amended on (MM/DD/YYYY) (if applicable)

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment specifically referred above.

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37 Code of Federal Regulations, § 1.56.

I hereby claim foreign priority benefits under Title 35, United States Code § 119 (a)-(d) or § 365(b) of any foreign application(s) for patent or inventor's certificate, or §365(a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or of any Pct international application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application Number(s)	Country	Foreign Filing Date (MM/DD/YYYY)	Priority Not Claimed	Certified Copy Attached?	
				Yes	No
9915331.4	GREAT BRITAIN	JUNE 30, 1999	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

☐ Additional foreign application numbers are listed on a supplemental priority sheet attached hereto.

I hereby claim the benefit under Title 35, United States Code § 119(e) of any United States provisional application(s) listed below

Application Number(s)	Filing Date (MM/DD/YYYY)	<input type="checkbox"/>	Additional provisional application numbers are listed on a

Type a plus sign (+) inside this box → ☐

# DECLARATION

Page 2

I hereby claim the benefit under Title 35, United States Code § 120 of any United States application(s), or § 365(c) of any PCT International application designating the United States of America, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States of PCT international application in the manner provided by the first paragraph of Title 35, United States Code § 112.1 acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations § 1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application.

U.S. Parent Application Number	PCT Parent Number	Parent Filing Date (MM/DD/YYYY)	Parent Patent Number (if applicable)
	PCT/GB00/02461	June 27, 2000	

☐ Additional U.S. or PCT international application numbers are listed on a supplemental priority sheet attached hereto.

As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith:

☒ Firm Name OR **SHERIDAN ROSS P.C.** Customer Number or label **22442**

☐ List attorney(s) and/or agent(s) name and registration number below:

Name	Registration Number	Name	Registration Number
ZINGER, DAVID F.	29,127	HANSEN, LEWIS D.	35,536
GROSETH, CRAIG C.	31,713	KOVARIK, JOSEPH E.	33,005
BLAKELY, TODD P.	31,328	SWARTZ, DOUGLAS W.	37,739
CONNELL, GARY J	32,020	KUGLER, BRUCE A.	38,942
CROOK, WANNELL M.	31,071	BRUNELLI, ROBERT R.	39,617
STAVISH, SABRINA CROWLEY	33,374	HANSRA, TEJPAL S.	38,172

☒ Additional attorney(s) and/or agent(s) named on a supplemental sheet attached hereto

Please direct all correspondence to: ☐ Customer Number or label OR ☐ Fill in correspondence address below

Name **DOUGLAS W. SWARTZ**  
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Address **CO**  
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Country **UNITED STATES OF AMERICA** Telephone **(303) 863-9700** Fax **(303) 863-0223**

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Name of Sole or First Inventor: ☐ A petition has been filed for this unsigned inventor

Given Name **Steven** Middle Initial **P.** Family Name **Golliffe** Suffix e.g. Jr. **-d**

Inventor's Signature **Steven Golliffe** Date **12th Jan 2002**

Residence City **Eastcote** State **Middlesex** Country **Great Britain** Citizenship **Great Britain**

Post Office Address		c/o World Golf Systems Ltd., Canada House, 272 Field End Road							
Post Office Address									
City	Eastcote	State	Middlesex	Zip	HA4 9NA	Country	Great Britain	Applicant Authority	
<input checked="" type="checkbox"/> Additional inventors are being named on supplemental sheet(s) attached hereto.									

Type a plus sign (+) inside this box → ☐

<b>DECLARATION</b>	<b>ADDITIONAL INVENTOR(S) Supplemental Sheet</b>
--------------------	--

Name of Additional Joint Inventor, if any:		<input type="checkbox"/> A petition has been filed for this unsigned inventor							
Given Name	David	Middle Initial	V.	Family Name	Jolliffe	Suffix e.g. Jr.			
Inventor's Signature						Date	12th Jan 2002		
Residence City	Eastcote	State	Middlesex	Country	Great Britain	Citizenship	Great Britain		
Post Office Address	c/o World Golf Systems Ltd., Canada House, 272 Field End Road								
Post Office Address									
City	Eastcote	State	Middlesex	Zip	HA4 9NA	Country	Great Britain	Applicant Authority	
Name of Additional Joint Inventor, if any:		<input type="checkbox"/> A petition has been filed for this unsigned inventor							
Given Name	Geoffrey	Middle Initial		Family Name	Emmerson	Suffix e.g. Jr.			
Inventor's Signature						Date	12th Jan 2002		
Residence City	Eastcote	State	Middlesex	Country	Great Britain	Citizenship	Great Britain		
Post Office Address	c/o World Golf Systems Ltd., Canada House, 272 Field End Road								
Post Office Address									
City	Eastcote	State	Middlesex	Zip	HA4 9NA	Country	Great Britain	Applicant Authority	
Name of Additional Joint Inventor, if any:		<input type="checkbox"/> A petition has been filed for this unsigned inventor							
Given Name		Middle Initial		Family Name		Suffix e.g. Jr.			
Inventor's Signature						Date			
Residence City		State		Country		Citizenship			
Post Office Address									
Post Office Address									
City		State		Zip		Country		Applicant Authority	

Post Office Address									
Post Office Address									
City		State		Zip		Country		Applicant Authority	
Name of Additional Joint Inventor, if any:				<input type="checkbox"/> A petition has been filed for this unsigned inventor					
Given Name				Middle Initial		Family Name			Suffix e.g. Jr.
Inventor's Signature						Date			
Residence City				State		Country		Citizenship	
Post Office Address									
Post Office Address									
City		State		Zip		Country		Applicant Authority	

☐ Further applicants and/or (further) inventors are indicated on another continuation sheet

Form PCT/RO/101 (continuation sheet) (July 1998) (form duplicated by Sheridan Ross P.C.-jmm)

See Notes to the request form

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			supplemental priority sheet attached hereto.
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10019767 041202

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## DECLARATION

## ADDITIONAL and/or AGENT INFORMATION Supplemental Sheet

Name	Registration Number	Name	Registration Number
CARDWELL, DANA HARTJE	40,638		
DALLAS-PEDRETTI, ANGELA	42,460		
LIEB, BENJAMIN B.	42,801		
KNEPPER, BRADLEY M.	44,189		
TRUDELL, MIRIAM DRICKMAN	42,499		
DUPRAY, DENNIS J.	46,299		
PETERSEN, Todd M.	45,580		
WINTERTON, Kenneth C.	48,040		
TRAYER, Robert D.	47,999		
JOHNSON, Brent P.	38,031		
YASKANIN, Mark L.	45,246		
KOCIALSKI, Mollybeth R.	42,754		